Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In The Matter of	)	
	)	
Inquiry Concerning Deployment of Advanced	)	GN Docket No. 17-199
Telecommunications Capability to All Americans	)	
In a Reasonable and Timely Manner	)	

COMMENTS OF EDUCATIONSUPERHIGHWAY

Evan Marwell
EDUCATIONSUPERHIGHWAY
433 California Street, Suite 500
San Francisco, CA 94104
(415) 967-7430

September 21, 2017

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EducationSuperHighway respectfully submits these comments in response to the Notice of Inquiry in the above referenced proceeding.

INTRODUCTION AND SUMMARY

EducationSuperHighway thanks the Chairman and the Commission for their leadership in seeking to close the digital divide by ensuring that advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion and for working to ensure that advanced telecommunications services are available in our nation's elementary and secondary schools and classrooms.

Over the last three years, the Commission's 2014 modernization of the E-rate program has catalyzed tremendous progress in making advanced telecommunications services available in America's schools. Thanks to E-rate modernization, 35 million more K-12 students have access to the FCC's minimum threshold of 100 kbps per student of Internet access; 97% of schools are now connected by fiber (up from 71%) and 88% of classrooms have robust Wi-Fi (up from 25%).[1] This is making it possible for schools

[1] *See* EducationSuperHighway, *2017 State of the States: Fulfilling Our Promise to America's Students* (September, 2017) available at http://stateofthestates.educationsuperhighway.org/ ("*2017 State of the States*")

across the country to leverage the power of digital learning to empower teachers, transform learning and give every student equal access to educational opportunity.

Unfortunately, as we start the 2017 school year too many students still lack advanced telecommunications services in their schools and classrooms. Over 6.5 million students do not meet the FCC's minimum Internet access benchmark of 100 Mbps per 1,000 students and staff; 78% of school districts do not meet the FCC's long term Internet access benchmark of 1,000 Mbps per 1,000 students and staff ; 2,047 schools still lack 21st century broadband infrastructure (fiber) and nearly 250,000 classrooms remain without the Wi-Fi connections necessary for students and teachers to take advantage of the promise of digital learning.[2] These students remain on the wrong side of the K-12 digital divide and the Commission needs to follow through on its promise to ensure that every child, regardless of income or location, has the same opportunity to utilize digital learning to learn the skills necessary to compete in the global economy.

The Commission's *Thirteenth Section 706 Report Notice of Inquiry* is an important milestone in the effort to fulfill its responsibility to connect America's elementary and secondary schools and classrooms to the advanced telecommunications services they need to provide students with a 21st century education. It provides the current Commission its first opportunity to assess the progress that has been made since E-rate modernization, identify the gaps that need to be addresses to deliver advanced telecommunications services to every school, and understand the actions it can take to finish the job of connecting America's K-12 schools to high-speed broadband. It also affords the Commission the vehicle for establishing an effective, objective and repeatable

[2] See *2017 State of the States* at 9 & 12

process for updating and evaluating progress against standards for advanced telecommunications services in elementary and secondary schools and classrooms. This not only gives the Commission the measurement it needs to take effective action toward achieving its statutorily mandated goals, but also enables it to catalyze action amongst other stakeholders toward these goals.

EducationSuperHighway commends the Commission for its recognition that sound data analysis must form the foundation of the *Thirteenth Section 706 Report Notice of Inquiry*. By establishing a core set of principles that will be used to "ensure that our broadband policies are well-informed and backed by sound data analysis"[3], the Commission is transitioning the FCC toward becoming a model for data-based policy making. These principles include:

1. Seeking objective data and other evidence reflecting the state of broadband deployment and availability;[4]
2. Recognizing the need to increase the Commission's benchmarks for what constitutes advanced telecommunications services over time as both the availability and demand for services changes;
3. Striving to establish a consistent, objective framework using predictable, reliable and regularly-released public data from sources on which the Commission can rely to evaluate its benchmarks;[5] and
4. Ensuring that the Commission has an up to date view of the issues affecting the deployment and availability of advanced telecommunications

[3] Thirteenth Section 706 Notice of Inquiry, GN Docket No. 17-199 Released August 8, 2017 paragraph 3
[4] Ibid.
[5] Ibid., paragraph 23

services and opportunities to accelerate deployment through the removal of regulatory barriers and updates to the Commission policies.[6]

In these comments, EducationSuperHighway seeks to provide input on how the Commission can build these principles into its requirement to evaluate the availability of advanced telecommunications capability specifically in elementary and secondary schools and classrooms.[7] To meet its obligations using these principles in the *Thirteenth Section 706 Report*, the Commission should:

1. Expand the definition of what constitutes advanced telecommunications services in elementary and secondary schools and classrooms to include the three key network elements required to deliver high-speed broadband to the classroom – 1,000 Mbps per 1,000 students and staff of Internet access, a fiber optic connection to every school and a robust LAN / Wi-Fi network that can deliver bandwidth to every classroom;
2. Recognize that schools are in a period of transitioning to digital learning in the classroom and will require increased levels of connectivity as the use of technology becomes increasingly widespread;
3. Establish that E-rate Form 471 data represents the most predictable, reliable and regularly-released public data from sources on which the Commission can rely to evaluate its benchmarks and enshrine this data as the primary source of data for its Section 706 evaluations;
4. Recognize that the original Form 471 data produced by the E-rate application process is not sufficiently reliable without significant

[6] Ibid., paragraph 48
[7] Ibid., paragraph 39

additional data cleaning work to use for a comprehensive evaluation of the availability of advanced telecommunications services in schools;

5. Direct the Universal Services Administrative Company (USAC) to prioritize and invest in improving the accuracy of the E-rate Form 471 data so that the data it releases to the public is nearly 100% accurate and can be relied upon to accurately assess the availability of advanced telecommunications services in schools;
6. Continue to rely on data from third party sources such as EducationSuperHighway and CoSN for the evaluation of the availability of advanced telecommunications services in schools until such time that USAC's publicly available Form 471 data is accurate and comprehensive;
7. Reaffirm in the *Thirteenth Section 706 Report* that at least 2,047 schools do not currently have the fiber optic connections required to deliver advanced telecommunications services in a reasonable and timely manner and without access to E-rate special construction funds and self-provisioning options these schools are unlikely to be able to get the fiber optic connections they need in a reasonable and timely manner.
8. Increase the E-rate discount levels available to schools that lack fiber optic connections so that the combination of E-rate and state matching funds provide 100% of the one-time construction costs necessary to bring advanced telecommunications services to these schools.
9. Clarify that service providers are not required to cost allocate the construction costs associated with E-rate funded trenching or aerial

deployments when they pull extra fiber they pay for to serve the rural communities that surround these schools.

10. Take action to improve the speed, consistency and effectiveness of the E-rate application review process as it relates to applications that include requests for special construction funding given that these administrative failures are directly preventing the deployment of advanced telecommunications services available to schools that lack fiber optic connections in a reasonable and timely manner;

By implementing these actions, the Commission can fulfill its obligations to effectively evaluate the availability of advanced telecommunications services in elementary and secondary schools and classrooms and ensure that all schools have access to these services in a reasonable and timely manner.

I. THE COMMISSION MUST EXPAND THE DEFINITION OF WHAT CONSTITUTES ADVANCED TELECOMMUNICATIONS SERVICES IN ELEMENTARY AND SECONDARY SCHOOLS

In its July 23, 2014 Report and Order on the E-rate program (the E-rate 2.0 Order)[8], the Commission adopted the following targets for broadband connectivity to schools and libraries:

- Internet access connectivity of 1,000 Mbps per 1,000 students and staff in schools; [9] and

[8] Modernizing the E-rate Program for Schools and Libraries, FCC 14-99, WC Docket No. 13-184, Report and Order and Further Notice of Proposed Rulemaking, Order Released July 23, 2014. This Order is hereinafter referred to as "E-rate 2.0 Order."

- WAN connectivity capable of scaling to 10 Gbps per school;

In addition, the Commission directed the Wireline Competition Bureau to conduct a survey as to the sufficiency of internal connections in schools and to further develop the record on an appropriate measure for determining if the internal connections in a school building were sufficient to support digital learning in the classroom.[10] This clearly demonstrates that when assessing whether advanced telecommunications services are available in elementary and secondary schools and classrooms, the Commission must look at not simply the amount of Internet access being delivered to a school districts, but also at the connections to each individual school and the internal connections (LAN/Wi-Fi networks) that deliver that connectivity to the classroom.

Three years later, we now have more clarity regarding what constitutes advanced telecommunications services for each of these K-12 network elements. As seen in Chart 1, 100 Mbps per student and staff can no longer be considered advanced telecommunications services given that 94% of school districts now meet this standard while 22% of school districts are already meeting the Commission's 1,000 Mbps per student and staff goal.[11]

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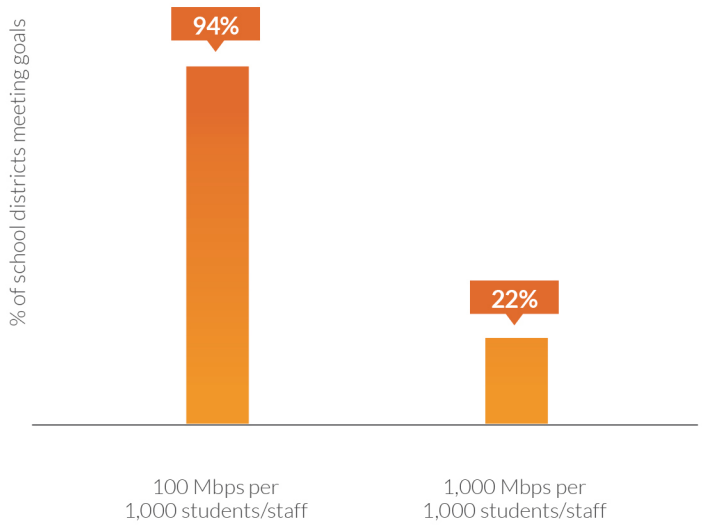
[9] Here we reference the "longer term" Internet access targets established by the Commission. These correspond to the 2018 targets established by the State Education Technology Directors Association.

[10] E-rate 2.0 Order, paragraph 45

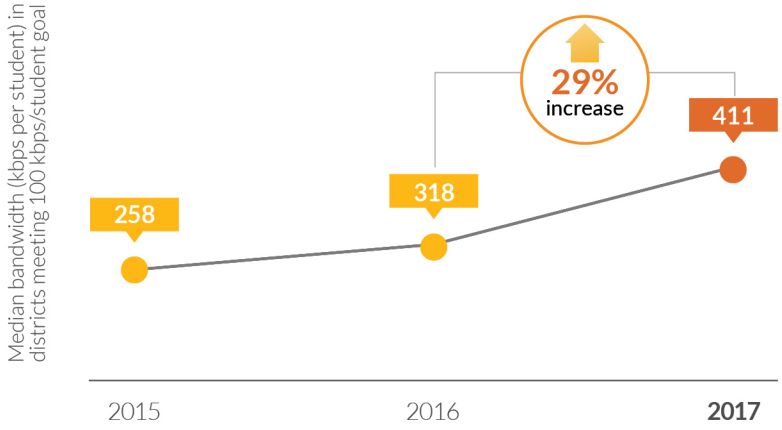
[11] See *2017 State of the States* at 6 & 12

Chart 1: Percent of school districts meeting the FCC's connectivity targets



In addition, as seen in Chart 2, the median bandwidth per student has now reached 411 Kbps per student among school districts meeting the Commission's 100 Mbps per 1,000 students and staff goal – a level that is increasing at an average of 29% per year.[12]

Chart 2: Median bandwidth per student



[12] Ibid., at 12

This provides clear support that it is now time to make the Commission's long term goal of 1,000 Mbps per 1,000 students and staff the definition of the Internet access component of advanced telecommunications services for elementary and secondary schools.[13]

Similarly, it is clear that in assessing the deployment of advanced telecommunications services as it relates to school WAN connections, the Commission should focus on whether schools have a fiber optic connection. In 2017, only a fiber optic connection is capable of scaling to 10 Gpbs per school. Moreover, because 97% of school campuses now have fiber optic connections, it is clear that fiber should be the benchmark for advanced telecommunications services connections to schools.

Unfortunately, while it is clear that robust LAN / Wi-Fi is required to deliver advanced telecommunications services to school *classrooms*, the Bureau has not yet followed through on the Commission's order to develop the record and propose a benchmark for measuring this network element. Thus, the Commission should continue to utilize a survey approach to assess the availability of advanced telecommunications services in classrooms as it relates to whether schools have sufficiently robust LAN / Wi-

[13] Interestingly, this corresponds with the original recommendation of the State Education Technology Directors Association (SETDA) who recommended that schools would need to meet the 1,000 Mbps per 1,000 students and staff by 2018. Source: Fox, C., Waters J., Fletcher, G & Levin, D., (2012) The Broadband Imperative: Recommendations to Address K-12 Education Infrastructure Needs. Washington, D.C.; State Education Technology Directors Association (SETDA)

Fi networks.[14] In 2017, 88% of schools reported having sufficient Wi-Fi in their classrooms, indicating that a gap still exists in deploying advanced telecommunications services to elementary and secondary school classrooms.[15]

The E-rate 2.0 Order makes it clear that the definition of advanced telecommunications services in elementary and secondary schools for the purpose of Section 706 must be expanded to include 1,000 Mbps per student and staff of Internet access; a fiber optic connection to every school and a robust LAN / Wi-Fi network. When evaluated against the current state of deployment, it is clear that gaps exist in all three of these components and the Commission must take action to ensure that advanced telecommunications services are delivered to schools in a reasonable and timely manner.

II. THE COMMISSION MUST RECOGNIZE THAT THE TRANSITION TO DIGITAL LEARNING WILL INCREASE THE BANDWIDTH THAT CONSTITUTES ADVANCED TELECOMMUNICATIONS SERVICES FOR SCHOOLS

As seen in Chart 2, the demand for bandwidth in K-12 classrooms is growing nearly 30% per year. This is a result of the growing penetration of digital learning into America's elementary and secondary schools in terms of both the number of schools / teachers integrating technology into their curriculum and the number of devices available in schools.

Most educators would agree that we are in the early stages of the transition to digital learning and that there is high variability in the degree to which different school

[14] To ensure the accuracy of this approach, the Commission should direct USAC to develop supplemental data collection approaches as the EPC system does not require E-rate applicants to update this information annually.
[15] See *2017 State of the States* at 6

districts, schools and teachers have integrated technology into their classrooms. This is reflected in the wide dispersion in the amount of Internet access that school districts are currently purchasing which ranges from 95 kbps / student at the 5th percentile to 3 Mbps per student at the 95th percentile.[16] However, there is little disagreement that the classroom of the future will fully integrate technology into the curriculum. Consequently, we anticipate that the Commission will need to increase its benchmarks for what constitutes advanced telecommunications services for elementary and secondary schools beyond its 1,000 Mbps per 1,000 students and staff in the future as schools make the transition to a media rich, personalized, digital learning classroom.

III. THE COMMISSION SHOULD DESIGNATE E-RATE FORM 471 DATA AS THE PRIMARY DATA SOURCE FOR ITS SECTION 706 SCHOOL CONNECTIVITY EVALUATIONS

In its Notice of Inquiry, the Commission states that "We believe our annual inquiry would be aided by establishing a consistent, objective framework using predictable, reliable and regularly released public data from sources on which we can rely to evaluate our benchmarks."[17] When it comes to evaluating benchmarks related to the deployment of advanced telecommunications services in schools, there is no better source than E-rate Form 471 data. E-rate Form 471 identifies exactly what schools are purchasing as it relates to the amount of Internet access, the type of connection to each school and the capacity of WAN connections. It also provides information on whether

[16] Source: EducationSuperHighway analysis of cleaned E-Rate Form 471 data
[17] Thirteenth Section 706 Notice of Inquiry, GN Docket No. 17-199 Released August 8, 2017 paragraph 23 & Free State Foundation Reply Comments, GN Docket No. 16-245 at 6-7 (Sept. 19, 2016).

schools believe their Wi-Fi networks are sufficient. Critically, it is also a comprehensive source of data as over 95% of schools utilize the E-rate program.

In addition, the E-rate Form 471 data meets the Commission's desire for "predictable", "reliable", and "regularly-released public data". It is predictable because applicants are required to file a Form 471 annually each March in order to receive their funding. It is reliable because applicants are required to certify the accuracy of their information to the best of their knowledge and because the applications go through a detailed review process by USAC, and it is "regularly-released public data" because the Commission made the data public as part of the E-rate 2.0 Order.[18]

No other data source so closely matches the Commission's objectives. As a result, the Commission should designate E-rate Form 471 data as the primary data source for its Section 706 evaluations of whether advanced telecommunications services have been deployed to elementary and secondary schools and classrooms in a reasonable and timely manner.

IV. THE COMMISSION MUST RECOGNIZE THAT THE FORM 471 DATA PRODUCED BY THE E-RATE APPLICATION PROCESS CURRENTLY REQUIRES SIGNIFICANT POST-SUBMISSION DATA CLEANING TO PROVIDE AN ACCURATE EVALUATION OF SCHOOL CONNECTIVITY

While E-rate Form 471 data is unquestionably the best source of data for evaluating the deployment of advanced telecommunications services in schools, the raw data produced by the E-rate application process is not of sufficient quality to be used for Section 706 evaluations. These issues have been clear to the Commission since 2014

[18] E-rate 2.0 Order, paragraph 160

when the data first became publicly available and the Commission, through USAC, has made investments to improve the data with some success. However, as seen in the data cleaning work required to produce EducationSuperHighway's *2017 State of the States* report, the raw Form 471 data still requires significant post-submission data cleaning in order to ensure that it is a comprehensive and high-quality data source.

In order to prepare the USAC released E-rate Form 471 data for use in the *2017 State of the States* report and the accompanying 2017 *Compare and Connect K-12* web site, EducationSuperHighway invested over 40 man-months of data quality specialist time reviewing and cleaning the data. Despite this effort, we were still not able to include 100% of public school districts in our sample. This time would have been significantly greater if not for the organization's investment in sophisticated E-rate specific data cleaning tools and the database of updates made to the data in 2015 and 2016. In total, EducationSuperHighway needed to update tens of thousands of E-rate Form 471 line items, and make changes to over 8,000 school district filings in order to have a database of sufficient quality to accurately report on the state of K-12 broadband in America's schools and provide state and district leaders with the information they need to make the most effective use of E-rate funding. Similarly, if the Commission wants the most accurate assessment of the deployment of advanced telecommunications services in elementary and secondary schools and classrooms, it must commit to cleaning the E-rate Form 471 data so it has as accurate and comprehensive a data set as possible.

V. THE COMMISSION SHOULD DIRECT USAC TO PRIORITIZE AND INVEST IN IMPROVING THE ACCURACY OF E-RATE FORM 471

DATA

The optimal way to ensure that E-rate Form 471 data is accurate and comprehensive for the purpose of Section 706 evaluations is to direct USAC to prioritize and invest in the cleaning of Form 471 data during the E-rate application and review process. Specifically, USAC should make adjustments to the EPC system to enhance data quality, and make the identification and correction of data issues part of the PIA process.

EducationSuperHighway's experience working with public E-rate data over the last three years is instructive regarding the level of investment the Commission must make to ensure it has accurate and comprehensive data for its school Section 706 reviews. To create a data sample that is of sufficient quality for our 2017 *State of the States* report (a good corollary for the data the Commission should utilize for its Section 706 assessment) EducationSuperHighway has built a team of over 30 analysts, engineers and data quality specialists that are focused on cleaning and analyzing E-rate data. Each year we invest over $4 million in these efforts and we have built an extensive IT infrastructure that enables us to ingest, clean, process and transform raw E-rate data into a data set that provides a comprehensive view of the state of broadband in America's K-12 public schools.[19] We have also invested heavily in automating these processes and in leveraging machine learning to improve the efficiency and effectiveness of our work.

[19] EducationSuperHighway's sample is focused only on district based K-12 public schools and does not include charter schools, parochial schools, private schools or tribal schools. If the Commission's Section 706 review needs to include these types of schools the investment level will likely be higher.

USAC is well positioned to take on the task of producing an accurate and comprehensive E-rate Form 471 data set. By establishing data quality as an objective for USAC on par with the efficient review and approval of E-rate applications, the Commission will have access to "predictable, reliable and regularly released public data from sources on which we can rely to evaluate our benchmarks". Moreover, by integrating the data quality objective into its current systems and PIA processes, USAC will be able to produce such a data set at a significantly lower cost than EducationSuperHighway is capable of today. Thus, the Commission should immediately direct USAC to prioritize and invest in improving the accuracy of E-rate Form 471 data.

VI. THE COMMISSION SHOULD CONTINUE TO RELY ON DATA FROM THIRD PARTY SOURCES SUCH AS EDUCATIONSUPERHIGHWAY AND COSN FOR ITS SECTION 706 REVIEW UNTIL USAC IS ABLE TO PRODUCE AN ACCURATE AND COMPREHENSIVE E-RATE FORM 471 DATA SET.

The Commission has an obligation and desire to use the most accurate and comprehensive data available to it for the purpose of assessing the availability of advanced telecommunications services in elementary and secondary schools and classrooms. There can be no question that the E-rate Form 471 data released by USAC is the best source of this data. However, there can also be no question that the raw data released by USAC is not as accurate as the E-rate Form 471 data that has been cleaned by EducationSuperHighway. As a result, in order to produce the most accurate Section 706 assessment, the Commission should rely on the metrics produced by EducationSuperHighway as part of its *State of the States* reports until such time that

USAC is able to produce a high quality, comprehensive Form 471 data set in a timely fashion.

EducationSuperHighway's clean Form 471 data is publicly available on the *Compare and Connect K-12* web site and includes a detailed methodology in conjunction with the *2017 State of the States* report. This data is widely accepted as the most comprehensive and accurate available and is used extensively by federal, state and district leaders, the media and service providers. EducationSuperHighway is also willing to conduct custom analyses for the Commission in support of its Section 706 evaluations upon request.

In addition to EducationSuperHighway's data, the Commission has also historically used survey data from CoSN as part of its Section 706 evaluation. This data is particularly applicable to the Commission's need to assess the state of LAN / Wi-Fi networks in elementary and secondary school classrooms and to understand the reasons holding back the deployment of advanced telecommunications services to schools in a reasonable and timely manner. Until USAC is able to produce an E-rate Form 471 data set that is of comparable (or better) quality to the EducationSuperHighway and CoSN data, the Commission should continue to rely on these external data sources for its Section 706 evaluations.

VII. THE COMMISSION SHOULD REAFFIRM THAT E-RATE'S SPECIAL CONSTRUCTION FUNDING AND SELF-PROVISIONING OPTIONS ARE NECESSARY TO DEPLOY ADVANCED TELECOMMUNICATIONS SERVICES TO ELEMENTARY AND SECONDARY SCHOOLS IN A REASONABLE AND TIMELY MANNER.

2,047 school campuses do not currently have the fiber optic connections required to deliver advanced telecommunications services in a reasonable and timely manner. As seen in Charts 3 and 4, these campuses are predominantly in rural areas and are scattered across the country.[20]

Chart 3: Rural and small town schools represent 3/4 of the schools without fiber

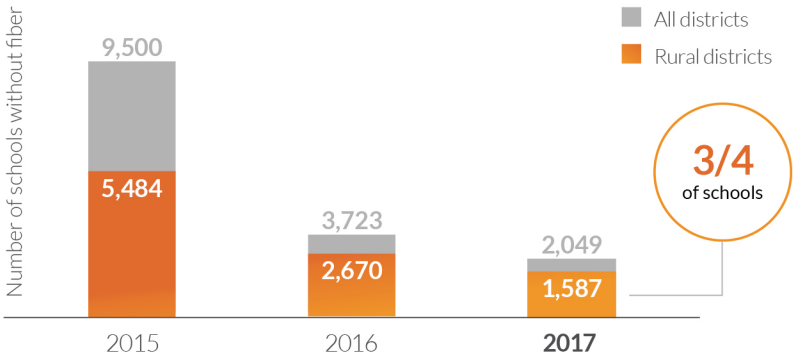
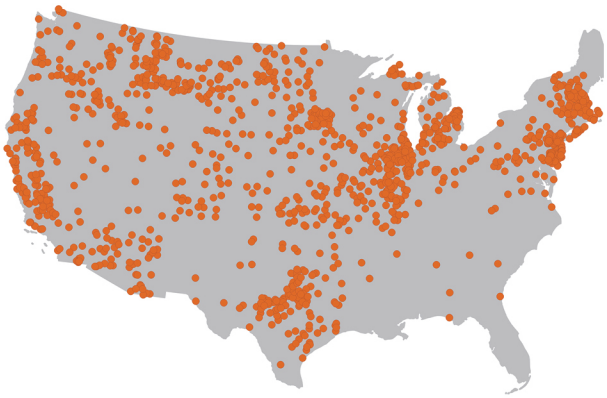


Chart 4: Nearly every state has schools that need fiber



Unfortunately, connecting these schools to fiber will be particularly challenging as the majority of these schools are in areas that have not historically been economically

[20] See *2017 State of the States* at 13

viable for service providers to build their own infrastructure. This is evident in the fact that during the 2016-17 E-rate cycle only 50% of the schools that requested fiber were able to get a bid to provide service from a service provider with an existing nearby fiber network.[21]

Several key provisions of the E-rate program provide school districts with tools that can be used to connect these schools to fiber. First, the ability of applicants to access special construction funds (and the suspension of the amortization rules related to the use of special construction funds) provides a critical source of funding for fiber builds that are estimated to cost an average of approximately $375,000 per school location.[22] The availability of special construction funds also increases the likelihood that a service provider will build fiber infrastructure to these schools. In the 2016-17 E-rate cycle, a third of the service provider bids received by schools requesting fiber infrastructure included requests for special construction funds.[23]

Second, the Commission's decision in its Second Report and Order on the E-rate program December 11, 2014 to permit "applicants to construct their own or portions of their own networks when self-construction is the most cost effective solution"[24] provides school districts with a critical option to deploy advanced telecommunications services to elementary and secondary schools and classrooms in a reasonable and timely manner when no service provider is willing to bring fiber to specific schools that lack these

[21] Ibid., at 14
[22] Ibid., at 15
[23] Ibid., at 14
[24] Modernizing the E-rate Program for Schools and Libraries, FCC 14-189, WC Docket No. 13-184, Second Report and Order on Reconsideration, Order Released December 19, 2014, paragraph 43

connections. Indeed, over the last two years, approximately 40% of the special construction funding requested was to support self-construction of fiber networks.

Given the clear importance of these provisions to the deployment of advanced telecommunications services in a reasonable and timely manner to the 2,047 schools that lack fiber optic connections, the Commission should reaffirm the importance of these provisions in the E-rate program as part of its *Thirteenth Section 706 Report*.

VIII. THE COMMISSION SHOULD INCREASE THE DISCOUNT RATE FOR SCHOOLS WITHOUT FIBER OPTIC CONNECTIONS TO 90% FOR FIBER CONSTRUCTION WHEN THE SCHOOL IS ELIGIBE FOR STATE MATCHING FUNDS.

The other primary roadblock in the deployment of advanced telecommunications services to the 2,047 schools that lack fiber optic connections is the ability of their school districts to afford their share of the up-front construction costs which average $104,000 per school campus.[25] In order to ensure fiber can be deployed to these schools in a reasonable and timely manner, the Commission should address this issue by eliminating the need for these school districts to pay any up-front construction costs. This can be accomplished by increasing the E-rate discount rate for special construction charges to 90% for any school that receives 10% of the costs from an eligible state matching fund.[26]

Currently, 18 states have established or are in the process of establishing state fiber matching funds with approximately $200 million of funding available to schools.[27]

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[25] See *2017 State of the States* at 15

[26] Modernizing the E-rate Program for Schools and Libraries, FCC 14-189, WC Docket No. 13-184, Second Report and Order on Reconsideration, Order Released December 19, 2014, paragraph 56

[27] See *2017 State of the States* at 14

As a result, roughly 25% of the 2,047 schools without fiber can be connected to fiber without the school district needing to contribute any up-front costs.[28] This is because these schools have 80% or greater E-rate discount rates and are in one of the states with a state fiber matching fund. Unfortunately, this leaves more than 1,500 schools without fiber that are unlikely to be able to afford their share of the up-front construction costs. Approximately 30% of these schools have 80% or greater E-rate discount rates and thus could be connected to fiber at no cost to the district if their state established a state fiber matching fund.[29] For the remainder of the schools without fiber, the Commission needs to take action to ensure that advanced telecommunications services can be deployed in a reasonable and timely manner.

Specifically, the Commission should increase the discount rate for special construction applications to build fiber to schools that do not have a fiber optic connection to 90% regardless of the school's free and reduced lunch population. When combined with a state matching fund, this will ensure no school is prevented from obtaining advanced telecommunications services in a reasonable and timely manner because it cannot afford the up-front construction costs required to deploy fiber. Importantly, the Commission can take this action within the current E-rate funding cap as the total additional cost to the E-rate program of making this change is at most $68 million and would likely be spread out over two to three years. This compares with the current funding available under the cap of nearly $900 million. [30]

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[28] See *2017 State of the States* at 14
[29] Ibid.
[30] Ibid., at 15

IX. THE COMMISSION SHOULD CLARIFY THAT SERVICE PROVIDERS ARE NOT REQUIRED TO COST ALLOCATE SPECIAL CONSTRUCTION COSTS WHEN PULLING ADDITIONAL FIBER IN E-RATE FUNDED TRENCHES OR AERIAL DEPLOYMENTS.[31]

The deployment of advanced telecommunications services to elementary and secondary schools also creates an opportunity for the Commission to speed the deployment of these services to all Americans in a reasonable and timely fashion. To accomplish this, the Commission should clarify that service providers are not required to cost allocate special construction costs associated with E-rate funded trenches or aerial deployments if they pull additional fiber that they pay for in those trenches or aerial deployments to serve the surrounding community. This "dig once" approach will maximize the impact of Universal Service Funds by ensuring that the Commission's investments in the deployment of advanced telecommunications services makes these services available to the greatest number of Americans. Indeed, EducationSuperHighway estimates that by clarifying this for service providers, as many as two million Americans who currently lack access to advanced telecommunications services will be able to access these services as E-rate is leveraged by service providers to connect the 2,047 schools that require fiber optic connections.[32]

X. THE COMMISSION SHOULD TAKE ACTION TO SPEED THE APPROVAL OF E-RATE APPLICATIONS THAT INCLUDE REQUESTS FOR SPECIAL CONSTRUCTION.

[31] Service providers should be required to pay the full cost of the additional fiber pulled but not any of the associated deployment costs.
[32] See *2017 State of the States* at 14

As demonstrated earlier in these comments, the availability of special construction funding is critical to connecting the 2,047 school campuses that currently lack fiber optic connections to advanced telecommunications services in a reasonable and timely manner. Unfortunately, if the funds are not made available to schools in a reasonable and timely fashion, it is impossible for them to deploy the services they need.

As seen in Funds For Learning's blog post *Special Construction Gets Special Attention* (July 21, 2017), USAC is denying special construction applications at a rate nearly 14x higher than E-rate applications overall. Moreover, "it is very clear from reading through denial and modification explanations for Special Construction FRNs that they are all flagged for *special* scrutiny" and that "the overwhelming majority of denials are for general E-rate compliance issues that aren't unique to fiber or special construction." Finally, Funds for Learning points out: "In FY2016, USAC guidance was changing and evolving during the period of time when many applicants had open bids on the street. Some were even an initial "green light" by USAC only to have conflicting guidance issued later."

One particularly troubling cause of delay and denials is the result of USAC and the Wireline Bureau's lack of alignment with industry standards in the special construction review process. Over the last two years, USAC has delayed or denied the approval of applications based on school districts or service providers over-provisioning fiber strands or building slack into their fiber runs. Many of the fiber overprovisioning issues were the result of applicants or service providers utilizing the smallest standard fiber bundle commercially available. Rather than being a waste of E-rate resources, this actually saves the program money over the cost of smaller custom bundles that are both

more expensive per foot and require a greater number of feet to be purchased. Similarly, delaying or denying applications on the basis of impermissible redundancy when applicants or providers include slack in their construction design makes no sense for the program as this is an industry standard in fiber construction without which the program is at risk of dramatically higher future maintenance costs in the event of a fiber cut.

If the Commission wants to meet its statutory requirement to deploy advanced telecommunications services to elementary and secondary schools in a reasonable and timely manner it must take action to improve and accelerate the application review process for applications including special construction. Specifically, it must: make clear to USAC the importance of approving these applications in a timely fashion and evaluate USAC's performance on this dimension annually; direct USAC to establish guidance for applicants on special construction at the start of an E-rate year and maintain this guidance throughout the review of these applications; ensure that all applications (whether they include special construction or not) are treated equally in terms of whether they are selected for special scrutiny; and align USAC reviews with industry standards.

CONCLUSION

By implementing the actions discussed above, the Commission can fulfill its obligations to effectively evaluate the availability of advanced telecommunications services in elementary and secondary schools and classrooms and ensure that all schools have access to these services in a reasonable and timely manner.

Respectfully submitted,

Evan Marwell
EDUCATIONSUPERHIGHWAY
433 California Street, Suite 500
San Francisco, CA 94104
(415) 967-7430

Date: September 21, 2017